VXdesigners

PEDAGOGICAL GUIDE

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INTRODUCTION

VX Designers is an innovative Erasmus+ project about using exhibition creation for learning in secondary school education. The project idea is focused on putting learners truly at the centre of the exhibition development process and maximising their learning and interest through a project-based learning activity: **co-curating an exhibition**.

In practice, the project develops a methodology and a set of tools and provides guidance and resources to support teachers as well as other education and museum professionals, in implementing an innovative pedagogy, using exhibitions to facilitate their learners' needs. The project also focuses on the usage of technology for digital exhibition creation, and on inclusive learning regarding exhibition curation, for learners with different needs such as those with Specific Learning Disorders and/or cultural differences.

The Pedagogical Guide is one of the five main outputs of the project, and it aims to provide all the necessary guidelines for teachers and school education experts, to know how to design, use and integrate exhibitions for their teaching practices. It will therefore present the technical aspects of co-creating an exhibition both offline and in a virtual environment, highlighting the pedagogical methodology and inclusiveness. In this sense, the Guide will help teachers answer questions such as:

- How to organise, create and use virtual exhibitions as a pedagogical tool?
- How to manage the students during the activity?
- How to connect the activity and the class material?

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- How to make it pedagogically relevant: before or after a lesson, in order to reinforce a learning process or to discover a topic, etc
- How to foster student's participation and use the possibilities of an exhibition to the fullest?
- How to make it a positive experience for a maximum of pupils?

Are you an educator interested in learning through exhibition creation? Then this Guide was made for you! We have tried to put the theory aside and provide you with clear guidelines and practical examples. We hope that you find this content interesting and useful for your teaching practice!

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PART 1
The pedagogical potential of curating an exhibition

The pedagogical function of exhibitions is undeniable. The educational approach and impact that is almost intrinsic to exhibitions for learning is first in relation to their plasticity. **Exhibitions can be "molded" to suit various needs and purposes**, one of which is the purpose of teaching and learning, fused together to form education. The holistic design and implementation of exhibitions make them an excellent interactive and creative educational tool.

Different exhibition types

Crucially, different types of exhibitions may bring about differing benefits to the educational process. For instance, virtual exhibitions tend to be more beneficial in terms of offering more opportunities to develop ICT and technical/digital skills as designing and implementing them will require more advanced digital tools (Dumitrescu, Lepadatu, and Ciurea, 2014).

Physical exhibitions, on the other hand, may require the realization of more sensory competencies, having to do with the physical structure and organization of the setting.

Virtual exhibitions may require more advanced research and experimentation in relation to sound, audio, special effects, digital tools and, possibly, Virtual Reality (ibid). The same holds true for the exploration of diverse topics. Exhibitions, both as formal and informal learning tools, offer the opportunity to learn about multiple topics, not just Art-related subjects which are typically associated with exhibitions, but rather subjects such as STEM, Social Sciences, Humanities, and more. Different topics may require the advancement and practice of diverse skills to achieve a desirable end-result that is beneficial to both learners and educators.

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Nevertheless, exhibitions tend to offer similar, if not the same, pedagogical benefits, despite their type or nature. Organizing, but also, co-creating an exhibition is equally, if not more, engaging and beneficial for education.

Co-creation for education

Simply viewing and/or attending an exhibition, whether virtual or physical, is highly educative and immersive. To be able to plan, design, implement and view it, however, entails additional and often overlooked benefits for education. The experience transforms itself from passive to participatory, where learning and engagement become more active and fruitful.

When students co-create with teachers, then teaching and learning is transformed into a **partnership**, which is a “collaborative, reciprocal process through which all participants have the opportunity to contribute equally, although not necessarily in the same ways, to curricular or pedagogical conceptualization, decision making, implementation, investigation, or analysis” (Cook-Sather et al., 2014: 6-7). This empowers learners (Ryan & Tilbury, 2013) and enables them to actively participate in understanding and constructing pedagogical resources with their teachers. The agency of learners can be adjusted depending on their knowledge and skills, but co-creation allows for high levels of agency in content creation, if applicable. Learners are involved from the project’s inception and can shape any aspect of its progression, if they so wish. Otherwise, learners can simply co-create through being testers or informants, a process that is still critical to the educational process. The end-product of this co-creation are co-owned exhibitions between teachers and students.

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Key benefits and skills

Exhibitions “can not only support students’ understanding of various disciplines, but also enhance critical and creative thinking and develop transferable academic skills such as writing, teamwork and oral communication” (The Teagle Foundation, 2019). Exhibitions as learning tools have multiple benefits for education:

- They are a **non-formal**, **creative** and **interactive** tool, serving as an alternative to traditional learning processes and formal education. Exhibitions provide creative solutions and content to deal with challenges related to education

- They enrich the transfer of knowledge through **increasing learners’ engagement** in the process of acquiring knowledge

- They offer a more **dynamic educational environment**

- They **help deliver curriculum targets** in ways that students find more fun

- They involve the **utilization of innovative methods, ICT (Information Communication Technology) training and skills** as well as **design and technical knowledge acquirement**

- They are a **holistic**, **multifaceted**, **interdisciplinary** method of learning

- They allow a **connected experience** when the options for virtual and physical interactions are provided

- They enable the **creation of personalized learning content**, according to educational goals and learners’ needs

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- They **reinforce inclusion and the reduction of social inequalities**, as they enable learners with SLDs, among others, to learn visually and increase their knowledge experience with fewer obstacles

- They provide opportunities for **active**, instead of passive **engagement** (which is very typical of traditional teaching) with the pedagogical content

- Exhibitions **open up school environments to the outside world** – they pertain to different rules and enable learners to live an experience in situ

- They enable the acquirement of **transversal skills** – including critical and innovative thinking, interpersonal & intrapersonal skills, global citizenship and media and information literacy (UNESCO, 2014)

- They enhance learners' **awareness** regarding research, challenges, needs, latest developments, recent discoveries and cultural heritage

- They offer the invaluable opportunity and ability to think critically, through enabling **critical analysis** around a subject, and thinking of ways to deliver content and learn from it whilst identifying challenges and finding ways to address them

- They provide the ability to **apply what has been learned** (i.e., with practical exercises)

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- They provide **long-lasting and tangible resources** for current and future learners

- Finally, they allow for **effective goal setting and problem solving** as learners can engage in the process of identifying and implementing steps for reaching a desired outcome and resolving difficulties.

Given the above, it can be deducted that exhibitions are considerably beneficial to the learning process, through their use of innovative tools and methods that allow project-based learning and co-creation. They are diverse in content and enable the active engagement of learners in the process of knowledge acquisition signifying their potential in making the learning experience greatly effective. Critical thinking, technical skills, research, and planning all flourish in the process of designing and implementing exhibitions, whether virtual or physical and are therefore deemed as invaluable pedagogical tools in the 21st century.

Knowledge

Exhibition as a tool for learning

To start with this section, it is worth mentioning that networking and creating partnerships between various institutions (e.g. museum-school) or stakeholders (e.g. curator-teacher) always bring additional value to the educational process and impact both institutions and all engaged beneficiaries. In the context of VX Designers project, partners are focused first on the educational approach.

Exhibition designing could be a great creative and interactive tool for education, and there are a number of benefits of this process: it offers a holistic and multifaceted learning experience (combining the knowledge and information collected through various sources/forms) and enriches the way of knowledge transfer. It increases

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learners' engagement in the process of acquiring knowledge and creates a dynamic educational environment providing more active experiences outside the traditional educational one. Exhibition designing also provides non-formal teaching, an alternative learning approach and supports delivering the curriculum targets. It develops contemporary and innovative methods of work including those based on ICT (allowing to use more multi-dimensional and inter-disciplinary content and mediums). It allows a connected experience by creating interactions with physical and digital content. Another important advantage is that it improves learning management systems to engage learners and educators with personalized learning content.

Pedagogical Content Knowledge and VX Designers project

In 1986 Lee Shulman, alongside his colleagues and students, proposed the idea of Pedagogical Content Knowledge as a response to the research[1] which state that teachers need both subject matter knowledge (Content Knowledge) and their general knowledge of instructional methods (Pedagogical Knowledge).

PCK[2] is a mix of Pedagogical Knowledge, which describes **"how" to teach** and Content Knowledge that describes **"what" to teach**. According to Shulman PCK "*embodies the aspects of content most germane to its teachability. Within the category of pedagogical content knowledge I include, for the most regularly taught topics in one's subject area, the most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations - in a word, the ways of representing and formulating the subject that make it comprehensible to others... [It] also includes an understanding of what makes the*

[1] e.g. Buchmann, 1982, 1983; Tobin & Garnett, 1988; National Science Education Standards (NRC, 1996); Benchmarks for Science Literacy (AAAS, 1993)

[2] A short video published on YouTube describing how the PCK framework works can be found here: https://www.youtube.com/watch?v=pTM9rzc-pq8

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learning of specific concepts easy or difficult: the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning".[3]

Thanks to the VX Designers project teachers will be able to **discover yet another form of teaching** their students, which will broaden their horizons and **develop their workshop** on their Pedagogical Content Knowledge. Not only does the project show new ways of teaching, but it also **provides various knowledge sources** useful in the subject through exhibition design.

[3] Shulman, L. S. (1987). *Knowledge and teaching: Foundations of the new reform.*

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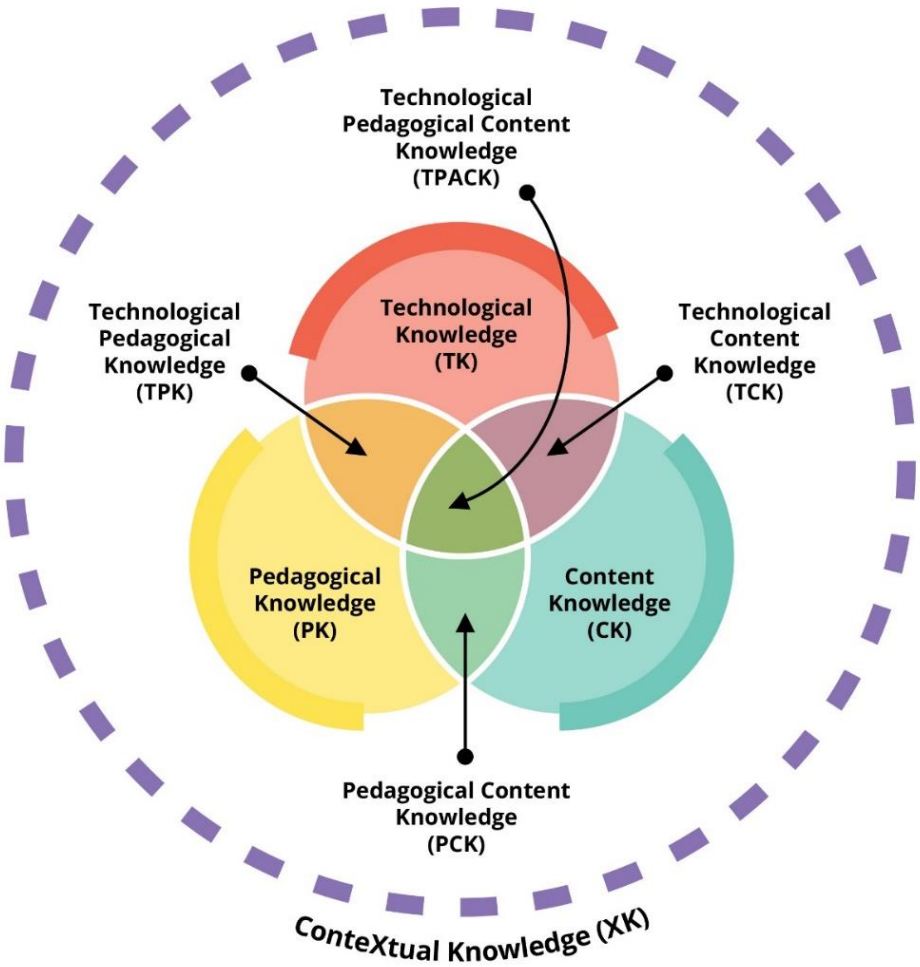
Technological Pedagogical Content Knowledge and VX Designers

Due to the advancement in technology, even more modern ideas about teaching and about teachers themselves have arisen. **Technological Pedagogical Content Knowledge (TPACK** in short) is a combination of **Technological Knowledge (TK)**, **Pedagogical Knowledge (PK)** and **Content Knowledge (CK)**. However, this is neither a brand-new idea nor is it owned by anyone. The first research on this framework was conducted by Mishra and Koehler in 2006[4], but due to the radical technical development, the framework gained popularity among researchers and scholars[5]. In 2019 Mishra



[4] Mishra, P., & Koehler, M. J. (2006). *Technological Pedagogical Content Knowledge: A framework for teacher knowledge.*

[5] Many publications and research can be found here: https://www.mendeley.com/search/

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proposed adding Contextual Knowledge in order to provide a better experience for teachers that use TPACK[6].

Many technological solutions find their use in teaching and TPACK describes the kinds of knowledge required by teachers for the **successful integration of technology in teaching**. The project VX Designers offers such an experience for educators and teachers. Through **designing exhibitions via a digital platform** teachers expand their technological knowledge, and thanks to that, they supplement their PCK with TK, **developing TPACK in their workshop**. Thanks to this new technological knowledge, teachers will be able to **reach a whole new level of the art of teaching.**

In the footnote you can find a more advanced explanation on how TPACK framework works (video[7] published by Common Sense Education[8], a non-profit organization that focuses mainly on providing educators with digital learning tools that engage students and teach them how to behave safely, responsibly, and respectfully online).

To sum up, VX Designers project can positively influence on by widening the range of knowledge for teachers. It allows to develop new TPACK, gives new ideas for conducting lessons using technology and innovative teaching forms, which is like designing exhibition design (either offline or online). Getting to know new methods of teaching and also methods of teaching with the use of technology is crucial to develop every teacher's material. The VX Designers project will help all the teachers and educators to have access to many valuable knowledge sources needed in the 21st century.

[6] Full article by Mishra: https://www.tandfonline.com/doi/full/10.1080/21532974.2019.1588611

[7] https://www.youtube.com/watch?v=yMQiHJsePOM

[8] https://www.commonsense.org/education/

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Engagement

An almost infinite number of methodologies can be applied in schools when using exhibitions for learning. We refer here to implementing many different learning activities related to exhibitions, such as designing them at school or an external exhibition visit, and to on-line or off-line activities. In the context of the VX Designers project we wish to encourage as many educational methodologies as possible, but with a clear emphasis on those that are learner-led, agile, promoting active learning, highly relational, fostering diversity and inclusivity, striving for continued evaluation, and multi-skills approach to learning. In addition, we encourage the use of digital tools and online resources, as these are attractive to young people and can offer: accessibility, adaptability, cost-effectiveness, and help acquire much needed skills in a digitalized world. We have identified here ten methodologies we consider most relevant; these learning methodologies are taken from a list of 25 best teaching practices from around the world, gathered by the “Learn Life Alliance”. We suggest them as some of the most important when designing or visiting an exhibition in a school context. Of course, more can be used. Deploying many different methodologies offers learners a variety of experiences that can increase their self-assurance and stimulate skills that further their independence in learning.

1. **Design Thinking:** It is a process to generate and develop ideas, based on five phases: discovery, interpretation, ideation, experimentation and evolution. It includes several methods to be implemented.

2. **Project based:** With this methodology students confront a question, problem, or challenge for an extended period allowing reflection, critical thinking, collaboration, and demonstrating their knowledge and skills by creating a result for a real audience.

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3. **Place based:** It involves the learners into the local community and environment, and immerse them in local heritage, cultures, landscapes.

4. **Game-based:** This methodology is based on the use of games to enhance the user experience and engage learners. It stimulates collaboration, problem solving, creativity and innovation.

5. **Challenge based:** In this collaborative and hands-on framework the learners try to identify big ideas, ask questions to discover and solve real challenges, it is organised in three phases: Engage, to move from an abstract idea to a concrete challenge; investigate, to arise to solutions; and act to implement the solutions and evaluate the results.

6. **Experience based:** The learners are immersed in experience, culture and context, developing their understanding. They analyse their experience and share information while on a field visit. Some device functionalities can be used, like camera or GPS, to enhance the learning experience.

7. **Deeper learning:** With this methodology the learners perform an extensive analysis of a subject or problem collaboratively, providing them with skills like analytic reasoning, problem solving and teamwork.

8. **Research based:** Involve the learners into authentic research, allowing them to experience a subject and theories working in practice and acquiring new skills.

9. **Mobile learning:** It is about the use of mobile devices to distribute online learning, in such a way that contents are available anytime and anywhere, maintaining consistency of learning regardless of location.

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10. **Peer-to-peer & social learning:** In this methodology learners share their knowledge with their peers, and also learn through interaction and observation in social settings. It can be implemented in the digital world, using platforms like forums where learners can share information and help others.

These ten teaching practices can be easily applied when using some of the resources offered on the VX Designers website. For example, students can use the VX Designers Virtual exhibition guide, to learn technicalities and practical information about the use of the exhibition generator platform. They can then use the VX Designers platform to create their own virtual exhibitions. This process can be supported by the educator with tips about research techniques, exercises involving design thinking, and conclude with a presentation to the class, which encourages peer-to-peer learning. In reality, educators already apply most of these practices, but the aim here is to integrate as many as possible in an easy and natural way, through the process of designing an exhibition.

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PART 2
Practical uses and creation of virtual exhibition in the classroom

Different usages to reinforce learning and teaching process

Today's students are the first generation to grow up surrounded by digital technology (Prensky [2001]). During their daily lives these students are routinely exposed to computers, electronic games, digital music players, video cameras and mobile phones. They are immersed in instant messaging, emails, web browsing, blogs, wiki tools, portable music, social networks and video sites (Prensky [2001]. These technologies allow them to communicate instantly and access any information virtually, from any place, by pushing a few buttons (Autry & Berge [2011]).

Digital activities allow students to work on multiple skills in various areas: disciplinary and interdisciplinary; appropriation of a computer work environment; common base. Another contribution is that students can access their digital workspace both at school and outside, which allows them to complete their work at home, creating a dynamic and cultural curiosity.
Below you will find some examples of activities for educators to use visual arts to reinforce learning as an introduction to a lesson, to review some content, to create an assessment for students and finally as homework.

Examples: two activities as an **introduction** to a lesson

1) **Humanities**

Activity Setting: Secondary education students being taught about European History and the era of French Revolutions against Monarchy. Before learning the particulars of the Revolution, but with a knowledge of the era, students are shown Delacroix' painting La Liberté guidant le peuple (Liberty Leading the People, 1830, Louvre,

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Paris). The painting commemorates the July Revolution of 1830, although many confuse it as commemorating the French Revolution.

Duration: 50 minutes (a whole session could be dedicated to this, depending on the lesson).

Materials: Projector, PC or laptop, high quality image of the painting saved or shown online.

Subject areas: History, sociology, literature, arts.

Description and Activities: The aim of the activity is to generate interest and engage students in a dialogue about the context of the French revolutions and their representations in the arts and literature. Let students notice the style of the painting (Romanticism, symbolism), the role of women as symbols, and discuss how ideas are in general represented as women in Arts. The teacher could discuss how that painting influenced others, if similar contemporary representations exist and if the image has any impact on people's perceptions today. Is there any criticism? Ask students to look into that.

Topics for discussion: Students could be asked to read Victor Hugo's 1862 novel *Les Misérables* and find similarities (In particular, the character of Gavroche is widely believed to have been inspired by the figure of the pistols-wielding boy running over the barricade). They can also be asked to find out what the connection between this and the Statue of Liberty in New York City is (The painting inspired Frédéric Auguste Bartholdi's *Liberty Enlightening the World*, known as the Statue of Liberty in New York City, which was given to the United States as a gift from the French, a half-century after *Liberty Leading the People* was painted). An engraved version of part of the painting, along with a depiction of Delacroix, was featured on the 100 francs note from 1978 to 1995.

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Ask students if they know who Marianne is in France and then explain the connection between her and the painting (this painting may be the best-known early version of the figure, who is a symbol of the French Republic and of France in general). Show more paintings with similar references.

Learning Benefits: Students get intrigued by the many different ways a painting has associations to other works. They work autonomously to find these connections and learn different historical and cultural facts in the process.

2) STEM

Activity Setting: Students in a Maths/Geometry class. Mostly addressed to younger learners.

Duration: 30 minutes (a whole session could be dedicated to this, depending on the lesson).

Materials: Projector, PC or laptop, high quality images of the paintings saved or shown online, good quality handouts of the chosen art works, paper, pens, pencils, any other drawing materials.

Subject areas: Maths, Geometry, Trigonometry

Description and Activities: Young learners are introduced to geometrical shapes and how to measure them through the works of Joan Miró and Wassily Kandinsky. Students are shown works of the two artists, who are famous for their use of geometrical patterns. A good introductory activity on Joan Miró for children could be found here: https://slideplayer.com/slide/4427613/
Show learners the following videos and optionally do the activity shown:
https://www.youtube.com/watch?v=vDWmLlNicMU
https://www.youtube.com/watch?v=O9rAdb_ULp0

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There are more videos available on these and other artists online, which the teacher could use.

Topics for discussion: How are these shapes incorporated in Art? What do they represent? Why did these and other artists choose to use geometrical shapes in the paintings? Where do we find geometry in real life and what are its applications? A discussion on how lines and angles and everywhere around us, and how their positioning and measurements are important in fields like e.g., construction, fashion, architecture could be generated by the teacher.

Learning Benefits: Integrating art into STEM subjects in general, helps students understand the inter-relatedness of everything they learn and promotes creativity and collaboration. The arts play a role in the development of reading, imagination, creativity and more. Integrating art makes STEM subjects more engaging and accessible, even to students who might otherwise not be interested. The art creation makes the entire activity relatable and fun.

Examples: two activities for the **revision** of a lesson

1) Humanities

Activity Setting: Following up on the Introductory activity about France, and after you have taught the Unit about the era, students will be assigned a project.

Duration: 1 to 3 didactic hours, depending on the number of students.

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Materials: Projector, PC or laptop, high quality image of the painting saved or shown online.

Subject areas: History, sociology, literature, arts

Description: The students are asked to create a PowerPoint presentation or a video connecting different works of art that represent the era of French revolutions. These could be arranged chronologically or thematically, depicting major events in the course of history. It would be interesting if students not only used visual exhibitions but also associated literary work and gave the historic and social background of the paintings they demonstrate.

Topics for discussion: This activity should not limit topics of discussion; it will mainly focus on how important, ground-breaking events took place at that time in history and how these influenced the Art of the time. But the teacher must be prepared to expand to issues that regard social, political or other aspects of life.

Learning Benefits: Students work on their project independently which increases collaboration skills, critical thinking, teamworking skills, initiative, and independent work. Project assignments are always a good way to encourage creativity, curiosity, and in-depth understanding.

2) STEM

Activity Setting: Secondary education students in a Maths/Geometry class. Mostly addressed to younger learners.

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Duration: 50 minutes (more sessions could be dedicated to this, depending on student numbers).

Materials: Pens, pencils, any other drawing materials. (Optional, if you want to show artworks: Projector, PC or laptop, high quality image of the paintings saved or shown online).

Subject areas: Maths, Geometry, Trigonometry

Description: After students have been taught shapes and measurements, ask them to create a Kandinsky or Miro inspired composition at home. This is an open-ended project, but the teacher must provide a specific number of lines and circles to be used, along with measurements and circumferences. The students should use these instructions to create different shapes, in different colours, inspired by the artists, but also following the teacher's instructions. Then let them exchange their work and measure each other's geometrical shapes. You could examine the projects in detail, pointing out lines intersecting circles, calculating perimeters, diameters, radius, measure distances etc.

Topics for discussion: This is an open-ended project; feel free to discuss any ideas students might have. It would be interesting to guide the discussion towards how geometry impacts many aspects of human activity, including art and the visual impact this has on them.

Learning Benefits: The arts nurture a motivation to learn by emphasizing active engagement, disciplined and sustained attention, persistence, and risk taking, among other competencies. This kind of hands-on activity can have a great learning impact on students and increase their motivation according to their interests and abilities. It also provides an opportunity for communication and spontaneous expression.

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Examples: two activities for the **assessment/evaluation or test** of gained knowledge

1) **Humanities**

Environment of the activity: Students in secondary school studied the revolutionary conflict in Spain. Following the study of this civil war, learners discover and understand the photograph “Death of a Republican Soldier” by Robert Capa (September 5, 1936).

Duration: 50 minutes.

Materials: Projector, PC or laptop with high-quality images of the photography saved or shown online.

Subjects’ areas: History and arts.

Description and activities: The purpose of this activity is to enhance students’ interest, to reappropriate the knowledge presented in the lesson, and to open a dialogue among students about the Spanish Civil War, its context, and more generally, war journalism. The teacher can introduce this photograph by explaining that it quickly became an icon, a symbol of a double commitment (that of the soldier dying in battle and that of the committed reporter risking his life) and a double allegory (that of the struggle of the Spanish people against fascism and the fall of the Republic). Ask students to interpret the photograph: what does the blurred effect refer to (shooting conditions, living history in the making, blurring of the landscape that becomes the aesthetic signature of photojournalism)? The freeze frame (effect of reality because the man is not on the ground, metaphor of the destiny which rocks)? The effect of pathos (suspended time)? What are the reporter’s intentions? At the beginning of this session, the teacher to speak about icons, question the pupils on the question of an icon, what are its functions, etc.

Process and topics covered: There are several possible avenues: students can be asked to write three words that reflect their impressions of this photograph, to give a title to Robert Capa’s photograph or to associate the image with other artistic works

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that they know. It could also be interesting to allow the students to take the same photograph, to replay the scene in real life or with the help of figurines and to question the posture of the photographer. For this proposal, the idea would be to compare the students' productions with Capa's.

To extend this activity, the teacher can make links with other committed work from the same period, such as the painting "Guernica" by Pablo Picasso (1937) or the film "The Dictator" by Charlie Chaplin (1940).

Learning Benefits (competence and analysis): Students are curious about the interpretations of this photograph, what it shows and what it has provoked (anecdote: many questions the veracity of the scene [improbable situations, risks involved, effective framing, effectiveness of the equipment]). They work independently to find connections, learn more about the subject. They work together to create new works inspired by the original.

2) STEM

Environment of the activity: The students, in secondary education, have just studied the phenomena of light diffusion. After learning about propagation models, they discover a selection of pictorial works (from the collections of the Louvre Museum in France) related to the subject: "Night, a seaport in the moonlight" by Claude-Jospeh Vernet; "Saint Jospeh the Carpenter" by Georges de La Tour; "The Sleep of Endymion" by Girodet and "The Fortune Teller" by Caravaggio.

Duration: 50 minutes.

Materials: Projector, PC or laptop with high-quality images of the artworks saved or shown online.

Subjects' areas: Physics and arts.

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Description and activities: The purpose of this activity is to engage the students, to reappropriate the knowledge presented in the lesson, and to open a dialogue about the diffusion of light and how the artists mentioned interpreted it in their pictorial works. The teacher can introduce the lesson by projecting the different works. On each work, students are invited to answer the following questions: What are the primary and secondary sources? What are the scattering objects? How is the ray or beam of light visualized? etc. It might also be interesting to interpret the effect that light has in each work: on the characters, on the scene in general, etc. And in the same way, to question the meaning of the said light.

Process and topics covered: There are several possible avenues: students can be asked to associate the works with other artistic works they know, to research the meanings of light in terms of art history. In order to make a practical and artistic link to this activity, it might be interesting to ask students to produce a work (pictorial or photographic) around the concept of light diffusion. Students could decide to make a scattering object (candle, sun, etc.) or draw/paint/photograph the beam of light. Obviously, each production should be commented on so that students can explain the effect they wanted to produce, why, and what it means.

Learning Benefits (competence and analysis): Students are curious about the interpretations of these works. They work independently to find connections, to learn more about the subject. They work together to research new works inspired by the original.

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Examples: two activities for **homework**

1) **Humanities**

Environment of the activity: As part of a project devoted to the values of the Republic and freedom of expression, students studied an excerpt from the poem "Liberté" by Paul Eluard.

Duration: 2 days.

Materials: An extract from Paul Eluard's poem.

Subjects' areas: Literature and art.

Description and activities: The objective of this activity is to allow students to adopt a critical distance from the language produced, to invite them to experiment and produce around their representation of the world and to implement a literary and artistic project. Each student is invited to reinterpret the poet's words through an artistic composition: drawing, photography, etc. Prior to this work at home, the teacher will introduce a collective reflection: how to animate the poet's words? Should the extracted text or words appear on the production? Can characters be added to the story? Can we vary the shapes of the letters (inspiration from the word FIRE for ashes; from snow for the word FLAKE), etc.

Process and topics covered: Once the work has been completed by each student, it might be interesting to create a small group exhibition in the classroom and invite each student to interpret the work of his or her classmate. First, by noting the techniques used (collage, drawing, etc.) and then by trying to understand what the student wanted to transpose into his or her work. Feel free to discuss any ideas students may have. This project also allows students to show their work without reluctance and to learn to look at others' work.

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Learning Benefits (competence and analysis): Students work on their project independently, which enhances their critical thinking skills, autonomy in their work, and verifies a thorough understanding of the topic.

2) STEM

Environment of the activity: This activity comes after a lesson comparing geometry and painting. During this lesson, the students discovered the work of Victor Vasarely and more generally the concept of optical art (Op'Art).

Duration: 1 hour.

Materials: Materials such as pencil, pen, rulers, etc. If the teacher wishes to show artworks from the movement or the dedicated artist, a projector with PC or laptop and high-quality images of the works will be needed.

Subjects' areas: mathematics, geometry and arts.

Description and activities: The purpose of this activity is to engage students' interest and invite them to connect mathematics and art. Through the study of artworks, students learn the vocabulary of geometry but also how to use geometry to create. The teacher can introduce the previous lesson by showing a video on the topic: https://www.youtube.com/watch?v=gVhHtCZHSkw

Next, ask students to create an optical illusion at home inspired by Vasarely's work. This is an open-ended project, but the teacher should provide instructions to use a graduated ruler to draw segments. Once they have mastered the technique, students can try again, adding different colours to enhance the effect of the illusion. The work can then be presented to the class. Invite students to share their artwork and explain how they each did it.

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Process and topics covered: Discuss with the students, ask them to associate Vasarely's work with other artistic works they know. Ask them if they have found this work or this artistic trend in other forms (e.g. in literature and in the movies with the work "Doctor Strange" from the Marvel-Comic universe). It could be interesting to orient the discussion on the impact that geometry and optical art produces on people. To question the pupils about the distorted perception of reality: of the distorted form of reality, of the shape, of the colour, of the dimensions or of the movement of the objects.

To extend this activity, the teacher can make links with the origins of kinetic art: the work of László-Nagy and Alexander Calder.

Learning Benefits (competence and analysis): This type of hands-on activity has a significant impact on student learning. They work independently to find connections, to learn more. Art practice also provides an opportunity for self-expression. These activities have many connections to other areas of learning: they foster curiosity in discovering the world, they encourage students to express reactions, tastes and choices in exchange with others.

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PART 3
How to integrate different profiles of students

Different profiles in the classroom

As teachers we know from experience that there will never be – and it should never be – a homogeneous classroom environment, because, simply, students are all different. This means that each student has different interests, skills and learning style, and of course, different background and needs. At the same time, all pupils should be encouraged to participate and enjoy learning, as a meaningful and fruitful process that gives them knowledge and confidence about themselves as students and as individuals. To achieve that, the role of the teacher becomes crucial but also quite challenging.

New approaches to teaching and learning such as inquiry-based learning and differentiated instructions not only admit diversity as the reality of every classroom, but suggest teachers and facilitators **engage the different profiles** and interests of their students, in order to enhance their confidence and autonomy in learning. Another good example of pedagogical theory in this direction is Gardner's (2006) theory on multiple intelligence. According to this approach, each learner's intelligence profile consists of a combination of relative strengths and weaknesses among the different intelligences: linguistic-verbal, musical, visual-spatial, bodily-kinaesthetic, naturalistic, interpersonal, intrapersonal, logical-mathematical and (at least provisionally) existential. For the various tasks that

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students need to perform during the lesson, teachers can suggest different ways using the various student's 'intelligence' to integrate them in the learning process.

These and the most recent approaches to teaching and learning, first of all, clearly show that the pedagogy of today's education is focused primarily on the student, more than any other component of the process – so called a student-centred approach – and their empowerment in taking control of their learning. Secondly, the engagement of differences leads to a more **inclusive education** by developing awareness and providing more opportunities for learning, participation and growth. Therefore, for an inclusive teaching and learning, teachers need to reassess their practices and adapt the content, methods, structures, instructions and strategies they use, in order to address the diversity of needs of all learners, increasing participation in learning, cultures and communities (UNESCO 2005).

For the needs of the present Pedagogical Guide, we will highlight ways of integrating learners of two main different profiles: 1) those who are struggling with **learning disabilities** such as Specific Learning Disorders (SLD), and 2) those who are facing **socio-economic challenges and cultural differences**. Our goal is to present the pedagogical aspects and the practical benefits of integrating these different profiles of students in the process of creating virtual exhibitions, making learning more inclusive, productive, and interesting for everybody.

Learners with learning disabilities (SLD, ADHD, HP, Special needs)

In this publication, the term learning disabilities is used as an umbrella term for pupils facing a diverse range of learning difficulties due to lack of a cognitive or bodily ability. For instance, pupils with Specific Learning Disorders (SLDs) such as dyslexia, dysgraphia, dyscalculia, dysphasia and dyspraxia, who make up 10 to 12% of the population – which means that in every classroom there is likely a student with a similar learning disorder; or pupils with Attention deficit / hyperactivity disorder (ADHD)

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or other Behavioural and Learning Disabilities (BLD) – which affects one in 20 children and adolescents in Europe.

These learners are much more efficient and productive when learning and participating in a safe and adaptive learning environment, which ensures several accommodations in the content, instructions and strategies. The first thing to consider here, is a **structured work**, with clear guidelines and organised activities and tasks that these students can follow without having doubts about what they are doing and how they can complete the given task. To do so, teachers should keep in mind having **clear objectives and learning criteria** and ensure that students understand them as well. Then, **a quiet classroom / working environment** is necessary in order to help pupils stay focused, avoiding distractions. Another great support for these learners is **working in pairs or small groups** of students. Using cooperative learning strategies when it is possible, has proved to be essential for learners with difficulties, but teachers need to ensure a cooperative behaviour within the group of students and support each other. Furthermore, **differentiated instruction** can support teachers in using flexible grouping, and providing activities that attract the different learning-style and student's preferences. Also, alternative ways of completing exercises and for **assessment** is a key point to encourage every student's participation in learning.

To engage every learner, and in particular those with learning difficulties, learning has to be **contextual to real-world experiences**, allowing students to find interest in the exposed topics. Therefore, content and concepts that are related to the world outside the classroom walls, can bring much more engagement and participation, especially

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when these are represented in alternative forms through, for example, **Art**. This is also the reason why students are generally more engaged within **informal or non-formal learning activities**, that go beyond the classroom settings and connect them to the real-life situation and challenges.

As we have seen in the Exhibition and Schools Guide of the VXDesigners project, exhibitions are very relevant for students with learning disorders as they are set as a non-formal learning activity, and are particularly encouraging and supportive for visual learners. Moreover, exhibition creation allows active learning and participation of students with learning challenges when accommodations like the above-mentioned are prioritised. Curation can foster the competencies, skills and self-esteem of learners with learning disabilities, primarily because they allow using multiple means of representing and expressing the content, such as visually or orally, through writing, illustrating, speaking or video recording. Especially with the use of technology, digital exhibition creation or digital curation provide more options to students and teachers to use audio-visual means and ways of sharing and presenting the content. In addition to that, by default, curating an exhibition (digital or not) is promoting student's choices, allowing the creation of personal learning paths and outcomes. This is a great source of empowerment for all students but especially for those with learning difficulties who in many cases lack confidence in taking responsibility or sharing their ideas and tastes. Nonetheless, teachers should not forget the "golden rule" about providing clear instructions and 'building up' the student's autonomy and responsibility on each task.

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Inclusion regarding socio-economic challenges and cultural differences

"Inclusive systems of education are essential to improve the learning environment by deploying skilled teachers, equitably targeting financial and learning support to disadvantaged schools, and providing intercultural and bilingual education" (Unesco, 2010, p.2)

Applying a diverse range of methodologies when approaching exhibition design or visits, helps to be inclusive to the different needs in a group of learners. In this way, educators can facilitate stimulating learning experiences and provide flexibility for learners to best expand their personal skills and competencies. Using different methodologies simultaneously, encourages learners to be versatile and equips them to remain open to many different career pathways.

A starting point to inclusion is to understand it as a right of everyone to fully participate and contribute, without restriction or threat of marginalization; in a truly inclusive setting, students feel safe and have a sense of belonging. To achieve this, **empathy is essential**, as well as seeing diversity as a valuable asset and not fearing differences.

Interlingualism is a method that encourages learners to switch creatively between languages and consolidate learning by continuous comparison. Learners should be encouraged to show interest in each other's languages, and compare how concepts can differ or change, so the language can be a window to diverse cultures and identity. A critical thinking helps to see situations from different socio-cultural perspectives, allowing different historical views and interpretations.

Cultivating Diversity, Equity, and Inclusion in Education Environments.

Racial and cultural diversity are hallmarks of our society. To celebrate this diversity, and cultivate harmony and respect for all peoples, educators must nurture equality and

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inclusion within the classroom. Students enter the classroom carrying an assortment of beliefs. This may include racial and cultural prejudices picked up from their neighbourhoods, pop culture, and their families. Educators can help combat prejudice and racial discord by supporting positive behaviours among students, fostering a sense of belonging for all students and their families, and instilling respect for all peoples.

Providing equitable access to education and supporting tolerance of those who look different or have special needs creates a positive effect on learning. Classroom management falters when students experience friction with other students. By actively engaging in learning activities that instil respect for diversity, **the classroom can become a place where respect is a cornerstone and intolerance becomes abhorrent.**

The classroom isn't an island. Its walls, even adorned with posters of diverse figures from history, are porous to ideas. By teaching students about the contributions that all cultures bring to our society, educators can encourage them to spread this respect for diversity beyond school. Integrated and diverse classrooms promote critical thinking, problem solving, and creativity. **Racial and economic diversity within the classroom results in higher test scores** – a quantifiable benefit, of course – but the least tangible reward is the bedrock of any healthy community: respect for the dignity of every human.

There are many practices, methodologies and strategies to develop equity that can be applied when using VX Designers resources: Using the cultural experiences of learners as a base for working is a practice called **culturally responsive teaching,** and promotes to revisit history from different perspectives, among others. This is for example the aim of The Black Curriculum, an initiative to reflect the multi-ethnic and broadly diverse society into the history national curriculum in the UK.

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Another pathway to promote equity is the use of **differentiated instruction** to teach the same material, with a variety of strategies depending on the needs of each learner. In the context of virtual projects is also important to be sure that all the learners have **access to tools and materials** to develop an activity, for example by using of open-source software and other common tools.

The field of equality, equity and diversity in the classroom is extensive, and more than a methodology, it is a pathway of constant work that VX Designers widely promotes.

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Closing note

As seen in this guide, VX Designers is an excellent opportunity to adapt learning to current times while enhancing learners' motivation and engagement.

In addition, exhibition design represents a highly versatile practice since it can be used to study an infinite number of topics and as a dynamic activity with multiple functions (as a lesson's introduction, homework, assessment…).

Finally, approaching technology to the classroom and implementing innovative and modern teaching methods is not only a stimulating tool that makes students develop numerous skills, but also a way to ensure inclusiveness and equity of opportunities among the diversity of students.

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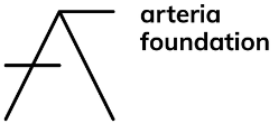

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